

**APPENDIX 2**  
**Field Staff Comments**

#### Auditor 1

My impression, based on my sample, is that well over half of new housing in Vt. is grossly excessive in size and hence grossly wasteful in resource use, regardless of how well built they may be. It would be very interesting to calculate square footage per occupant... Several of my houses were well over 2000 sf/person.

Construction seemed generally sound, but in regard to energy efficiency I found little understanding or concern on the part of builders/owners regardless of house size. Almost no one in my sample had ever heard of RBES. Houses were generally adequately insulated and (with four exceptions) often extremely tight - but lacked adequate mechanical ventilation. Few sealed combustion heating systems. Several unvented Lp ranges. Many fireplaces, but relatively few serious wood stoves. No other use of renewables or solar. Almost no use of efficient lighting. On the contrary, lighting was typically excessive, with widespread use of recessed fixtures. Other appliances were generally just OK - thank goodness for whatever minimum appliance efficiency standards there are!

#### Auditor 2

I did not notice any trends

#### Auditor 3

I think it might have been useful to have gone for a little more detail on the domestic hot water heating strategy e.g.: are the pipes proximal the tanks insulated? what is the measured temperature of the DHW? is the indirect fired storage tank installed per manufacturers specifications, etc. I am finding that when I look at the natural gas consumption data on many of the new homes in VGS territory, the domestic hot water load is  $>1/3$  of the total. I further noticed a correlation between abnormally high gas use for DHW and abnormally high (135F+) DHW temperature. This seems to be especially true with chimney vented tanks (these, by the way, are not permitted in the VGS RNC program). Of course, another way to look at this data is to realize that the DHW % seems high because the homes in the VGS are using comparatively little energy for space heating.

It did not appear to me that many of the builders were paying much attention to combustion safety. Certainly there was one building that had a history of equipment failing to vent (Hathaway), and one new home had a "vent free" space heater. I suspect that if we had subjected all the buildings to "worst case depressurization testing" of the combustion equipment's ability exhaust the combustion gasses safely we would have found additional buildings where flue gas spillage is a potential problem.

I saw many instances where there had been little effort to create an effective air-barrier between the living space and the garage. While having an effective air barrier is certainly not a cure for automobile-generated CO air pollution in homes, the air barrier at least

slows down infiltration from the garage and gives the leakiness of the garage and house WRT ambient time from some amount of dilution. The ideal solution would be to design houses where the car is not (effectively) parked in the living space. As that will not happen, a second best approach would be to create an effective air barrier between the house and the garage and install an exhaust fan (in the garage) that is able to depressurize the garage WRT the house until the contaminants in the garage have been exhausted.

#### Auditor 4

Auditor 4 verbally reported attic hatch insulation was poorly installed in many houses, frequently reducing the R-value to virtually zero and creating a thermal bypass. He also noted a general lack of attention to the details of correctly installing insulation.